WHAT IS CLAIMED IS:

1. A method of optically imaging subsurface anatomic structures and biomolecules in an individual or animal with red light and infrared radiant energy, comprising the steps of:

illuminating a region of interest with light from the red to radiant infrared portion of the light spectrum; and,

detecting red and infrared light from said region of interest with a red and infrared light sensitive image detector.

2. The method of claim 1, wherein said region is illuminated with light energy having wavelengths ranging from 600 nm to 1100 nm.

3. The method of claim 1, wherein said infrared sensitive image detector detects red and infrared light selected from the group consisting of transmitted light, reflected light, absorbed light, and emitted light.

4. The method or claim 1, wherein said light is detected by a method selected from the group consisting of pulsatile enhanced imaging, confocal enhanced imaging, Raman enhanced imaging, laser speckle enhanced imaging, multiphoton interaction enhanced imaging, optical coherence tomography enhanced imaging, time correlated single photon counting enhanced imaging, optical rotary dispersion imaging, circular dichroism imaging, and polarization enhanced imaging.

5. The method of claim 1, wherein images from said infrared sensitive image detector are displayed on a video monitor.

6. The method of claim 1, further comprising the step of adding an exogenous chromophore to the region of interest.

7. The method of claim 6, wherein said chromophore is selected from the group consisting of indocyanine Green (ICG) and δ-aminolevulinic acid

8. A device for performing the method of claim 1, said device comprising:

a red to radiant infrared light source;

a red and infrared sensitive image detector; and,

a means to display detected images.

9. The device of claim 8, wherein said light is provided by a source selected from the group consisting of light-emitting diodes (LEDs) filtered with a bandpass filter, diode lasers and filtered broadband illumination.

10. The device of claim 8, wherein said detector is selected from the group consisting of a charge-coupled device (CCD) and a CCD video camera.

11. A method of optically imaging subsurface anatomic structures and biomolecules by pulse oximetry, comprising the steps of:

illuminating a region of interest with alternating wavelengths of light from the red to radiant infrared portion of the light spectrum; and,

detecting red infrared light from said region of interest with a pulse oximeter.

12. The method of claim 11 wherein said method is used to detect blood in said region of interest.

13. The method of claim 12, wherein said region of interest is illuminated with red light of 660 nm wavelength and infrared light of 940 nm wavelength.

14. The method or claim 12, wherein imaging of arterial and non-arterial blood is differentiated by discriminating between time-varying signals and non-varying signals.

15. The method of claim 12, wherein an electrocardiogram (ECG) electrode is used to monitor a heartbeat in order to match the phase of the signal with the heartbeat.

16. The method of claim 12, comprising the further step of using pulse oximetry data to determine the oxygen saturation of said blood.

17. The method of claim 11, wherein illumination is performed with multiple wavelengths of radiant energy to achieve enhanced imaging contrast.

18. The method of claim 17, wherein said enhanced imaging contrast is used to distinguish between hemoglobin within blood vessels versus extravascular hemoglobin.

19. The method of claim 17, wherein said enhanced imaging contrast is used to distinguish between myoglobin, oxyhemogloblin and deoxyhemoglobin to obtain blood-tissue contrast.

20. A device for performing the method of claim 11, comprising,

a source of red to radiant infrared light of alternating wavelengths;

an red and infrared sensitive image detector; and,

a means to display detected images.

21. The device of claim 20, wherein said light is provided from a broadband source and said detector is a camera fitted with a rotating filter wheel.

22. A method of obtaining depth specific information when optically imaging subsurface anatomic structures and biomolecules, comprising the steps of:

illuminating a region of interest with narrow bands of light from the red to radiant infrared portion of the light spectrum; and,

detecting red and infrared light from said region of interest by confocal imaging.

23. The method of claim 22, comprising the further step of alternating red illumination with white light illumination so that a normal image of the region-of-interest is obtained.

24. The method of claim 22, wherein said region of interest is alternatively illuminated with radiant energy of 660 nm and 940 nm wavelengths to collect information on oxyhemoglobin and deoxyhemoglobin as a function of depth.

25. A device for performing the method of claim 22, comprising,

a source of red to radiant infrared light;

an infrared sensitive confocal image detector; and,

a means to display detected images.

26. A method of optically imaging the location of a specific biomolecule in subsurface anatomic structures by Raman spectroscopy, comprising the steps of:

illuminating a region of interest with a single wavelength of light from the red to radiant infrared portion of the light spectrum; and,

using Raman spectrosopy to detect frequencies and intensities of light emitted from said region of interest, wherein

frequencies are specific to given biomolecules and intensities are indicative of the amount present;

analyzing said data as a function of location to construct a two or three dimensional image of the distribution of a detected biomolecule.

27. The method of claim 26, wherein said region of interest is illuminated with light from an 850 nm diode laser.

28. A device for performing the method of claim 26, comprising,

a source of red to radiant infrared light;

a Raman Spectroscope; and,

a means to process and display detected images.

29. A method of using laser speckle imaging to detect movement when optically imaging subsurface anatomic structures and biomolecules, comprising the steps of:

illuminating a region of interest with coherent laser light in the red to radiant infrared portion of the light spectrum;

detecting a "speckle" pattern of light reflected from said region of interest with a sensitive detector; and,

monitoring movement said "speckle" pattern to detect movement.

30. The method of claim 29, wherein said movment is blood flow.

31. A device for performing the method of claim 29, said device comprising:

a red to radiant infrared coherent laser light source;

a red and infrared sensitive image detector; and,

a means to display detected images.